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ABSTRACT

This monograph addresses the educational needs of learners who have physical and health impairments that adversely interfere with their educational performance and who thus require special training, related services, adaptive equipment, modified materials, and/or barrier free facilities. The first section discusses the identification of learners with physical and health impairments and cites federal legislation and state definitions and standards. The next section reviews common physical and health impairments of school age children. It differentiates the terms, "handicap", "disability", and "impairment" and describes specific conditions such as orthopedic impairment, neurological impairment, spina bifida, multiple sclerosis, cerebral palsy, paralysis, muscular dystrophy, scoliosis, arthritis, diabetes, asthma, hemophilia, trauma, Acquired Immune Deficiency Syndrome, and prenatal exposure to alcohol and drugs. The following section identifies 20 specialized needs of this population. Student needs include academic needs, a specialized curriculum, self help skills, appropriate adaptive devices, psychological support, mobility, transportation, physical education and recreation, prevocational and vocational preparation, and transitional skills. Also identified are needs of the school system including the need for trained educational personnel, early identification and intervention, related services, flexible scheduling, program standards and modifications, a continuum of special education services, facility modifications, medical supervision, parent support and training, and information, equipment, and trained personnel in technological advances. (47 references) (DB)

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UNIQUE EDUCATIONAL NEEDS OF LEARNERS WITH PHYSICAL AND OTHER HEALTH IMPAIRMENTS

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Introduction

The purpose of this document is to provide information pertinent to the unique educational needs of those learners whose primary handicap is that of a physical or health nature. The field of physical and health impairments deals with learners with injuries, diseases, and deformities that occur in the musculoskeletal and neuromuscular systems. The U.S. Department of Education in 1986 reported that the number of 3 - 21 year old handicapped children in need of special education programs during the 1984-85 school year was 58,835 orthopedically impaired and 69,118 health impaired children. Note: these figures only reflect those children whose primary handicap is of a physical or health impairment. Bigge and Sirvis (1986) noted that physical disabilities and health impairments often occur in combination with other handicapping conditions. Note: some physical or health impaired learners my have other secondary handicaps such as visual, auditory, cognitive and behavioral delays which may require educators to address other educational needs beyond those related to the physical or health impairment.

The two handicapping conditions of primary focus will be **physical** and **health impairments** that adversely interfere with learners' educational performance to such an extent that special training, related services, adaptive equipment, modified materials, and/or barrier free facilities are needed to help them reach their maximum educational potential. Both of these impairments are medically based handicaps and are very similar in regards to identification, evaluations and educational procedures. Therefore, the two conditions will be treated as one in regards to recognizing the educational needs that are characteristic of these children.

Information regarding the educational needs of learners with physical and other health impairments will be presented to (1)

provide an awareness of the range of physical and health impairments that require special education and/or related services, (2) assist educators with the identification and classification of learners with physical and other health problems, (3) assist teachers and parents in understanding the unique educational and social needs of these children and, (4) help administrators determine the appropriate educational placements, curriculum, adaptive devices and services for children with physical and health disabilities.

Mullins (1979) stated that children with physical and health impairments should be included in educational programs on the basis of their particular learning needs, not according to their specific disability or disease.

Identification of Learners with Physical and Health Disabilities

The federal law, Public Law 94-142, The Education of All Handicapped Children Act of 1975, defines the category of physically and other health handicapped children as:

> **Orthopedically impaired** means a severe orthopedic impairment which adversely affects a child's educational performance. This includes "impairments caused by congenital anomaly (e.g., clubfoot, absence of some members, etc.), impairments caused by disease (e.g., poliomyelitis, bone tuberculosis, etc.) and impairments from other causes (e.g., fractures or burns which cause contracture, amputation, cerebral palsy, etc.).
>
> **Other health impaired** means limited strength, vitality or alertness, due to chronic or acute health problems such as heart condition, tuberculosis, rheumatic fever, nephritis, asthma, sickle cell anemia, hemophilia, epilepsy, lead poisoning, leukemia or diabetes. (Section 602, P.L. 94-142).

Section 504 of the Rehabilitation Act of 1973, defines a person who is considered handicapped as a person who has a mental or physical impairment that substantially limits participation in one or more life activities. According to Kirk and Gallagher (1989), when a physical disability or health condition interferes with a child's ability to take part in routine school or home activities, the child is said to have a physical handicap.

To parallel the federal definition of Public Law 94-142, The Education of All Handicapped Children Act of 1975, for physically and other health impaired children, the Michigan State Board of Education has included, as part of the state mandate, the following determinations:

> (1) The physically and other health impaired shall be determined through the manifestation of a physical or other health impairment which adversely affects educational performance and which may require physical adaptations within the school environment.
>
> (2) Determination of impairment shall be based upon a comprehensive evaluation by a multidisciplinary evaluation team, which shall include one of the following:
>
> (a) an orthopedic surgeon
> (b) an internist
> (c) a neurologist
> (d) a pediatrician
> (e) any other approved physician as defined in Act No. 368 of the Public Acts of 1978, as amended, being •333.1101 et seq. of the Michigan Complied Laws.

(3) A determination of impairment shall not be based solely on behaviors relating to environmental, cultural, or economic differences (R340.1709 Rule 9.).

Identification of children with physical disabilities and health impairments is primarily the responsibility of (1) physicians, pediatricians and neurologists whose specialty is conditions and diseases of the brain, spinal cord, and nervous system, (2) orthopedists and orthopedic surgeons who are concerned with muscle function and conditions of the joints and bones, and (3) physical and occupational therapists (Kirk & Gallagher, 1989).

In order to determine the degree of an impairment, the terms mild, moderate, and severe are used. Jones (1983) distinguished the terms as follows,

a mild motor impairment is marked by "very little limitation of activity or incoordination," whereas a child with a moderate impairment has disabilities "severe enough to be a handicap in ambulation, self-help, and communication, but not sufficient to be disabled entirely," and a child with a severe impairment has disabilities that, without treatment, "will be almost totally incapacitating".

The Tennessee State Department (1985) developed a model consisting of three components to assist educators in identifying physical and health impaired children. This model emphasizes the following:

1. Medical Evaluation
   (Note: the following types of information should be requested by a licensed physician)

   (a) •Information about the Impairment
   •Diagnosis/Etiology
   •Prognosis and Expected Duration

•Treatment Information
•Physical Limitations

(b) Information that would help the student function within his/her educational environment, and

(c) Certification of the handicap.

2. Social and Physical Adaptive Behaviors

Both social and physical adaptive behaviors which relate to the impairment should be assessed. A determination must be made as to whether social and/or physical adaptive behaviors which relate to the student's medical problems are interfering with his/her educational performance. Assessment in the following areas, when appropriate, is suggested:

(a) Social Adaptation--Interaction with others

(b) Communication--Expressive and receptive

(c) Positioning/Mobility

(d) Self-Help or Independence

(e) Prevocational - Vocational

3. School History and Levels of Educational Performance

The student's levels of educational performance should be documented by either a review of the student's educational records or an individual assessment. If the school history indicates that the student is having difficulty, then an assessment of the levels of academic performance should be conducted. The degree or types of disorder should be considered in deciding how

extensive the review should be and the personnel to be involved.

In order to provide a special education program and/or related services to a physical or health impaired student, the following items must be completed:

1 the student must be evaluated by a multidisciplinary team (refer to page 16 regarding who may serve on this team) and

2 an individualized education program (IEP) must be developed which certifies that the student meets the federal mandate (P.L. 94-142) regarding the definition of a physical or other health impaired student.

Note: the IEP will also determine the least restrictive environment, the type of curriculum modifications, adaptive devices and related services.

After completing the procedures for identifying and evaluating a student with a physical or health impairment, educators must address and plan for the student's educational needs through the IEP process.

Individualized education program (IEP) is a unique program to be developed for each handicapped child. This written statement, developed jointly by several individuals, will include a statement about the child's current level of achievement, a listing of goals and objectives, and an explanation of where the child will be educated, for how long, by whom , and the type(s) of educational programs (special education and/or regular education) and related services, and the child's least restrictive environment (P.L. 94-142).

Note: as used, the term **special education** means specially designed instructions, at no cost to the parent, to meet the unique needs of a handicapped child, including classroom instruction, instruction in physical education, home instruction, and instruction in hospitals and institutions. 34 C.F.R. 300.14(a)(1). (P.L. 94-142).

The term **related services** means transportation, and such developmental, corrective, and other related services, (including speech pathology and audiology, psychological services, physical and occupational therapy, recreation, and medical and counseling services, except that such medical services shall be for diagnostic and evaluation purposes only) as may be required to assist a handicapped child to benefit from special education, and includes the early identification and assessment of handicapping conditions in children.

Common Physical and Health Impairments of School Age Children

In order to understand the spectrum of educational needs and to plan appropriate programs for physical and health impaired children, an awareness of school-age handicapping conditions is warranted. The overall purpose for presenting this summary of the most prevalent physical and health impairments of school aged children is to assist educators in:

(1) being aware of the range, degrees and the short-long term effects of physical and health impairments,

(2) understanding how physical and health disabilities can impair a child's ability to attend school and to perform physically, socially and academically,

(3) recognizing that certain impairments will require specialized educational and support personnel, adaptive equipment and medical supervision, and

(4) gaining insight on the vital need for the school personnel to be informed in order to better prepare them in developing an educational program to meet each student's needs.

In addition, the brief description of the terminology, most common injuries, diseases, and deformities will assist educators in understanding the unique set of educational needs that must be addressed for the physical and health impaired population.

Handicap This refers to the functional restrictions imposed by society which expects performance of a certain kind or in a certain way.

Disability This refers to the actual physical or psychological condition. It is a limitation of some kind - an inability.

Impairment This refers to the actual loss or abnormality of physical or psychological function (Hanna & Graff, 1977).

A physical disability is a condition that interferes with the child's ability to use his or her body. The term orthopedic impairment generally refers to conditions of the muscular or skeletal system, and sometimes to physically disabling conditions of the

nervous system. The term health impairment refers to a condition that requires ongoing medical attention.

According to Shivers & Fait, 1985, an **orthopedic impairment** involves a child's skeletal system; that is, the bones, joints, limbs, and associated muscles. Whereas a neurologic impairment involves the nervous system, affecting a child's ability to move, use, feel, or control certain parts of the body. Even though both impairments cause similar limitations in movement, they are treated as two distinct and separate type of disabilities in regards to the medical treatment. However, many of the same educational, therapeutic, or recreational activities are likely to be appropriate for students with orthopedic and neurologic impairments (Hallahan & Kauffman, 1978).

Some physical and health impairments are of a congenital nature meaning that they are born with physically handicapping conditions or develop them soon after birth. Whereas, some children progress through normal developmental sequences and experiences, then develop or acquire--through injury or disease--a physical or health handicapping condition. The age at which the physical impairment occurred and the cause of the condition will help educators in identifying the educational needs.

One of the most common ways for children to become physically handicapped is to suffer damage to or deterioration of the central nervous system--i.e., the brain or spinal cord (Hallahan & Kauffman, 1978). These neurological impairments may be caused by a variety of factors such as physical trauma due to accidents, congenital malformations, and infectious diseases.

A few of the most common types of neurological impairments of school-aged children are:

convulsion/seizure - an abnormal discharge of electrical energy in the brain which can result in disturbances in movement,

sensation, behavior, or consciousness known as seizures. Seizures that occur chronically and repeatedly are known as **epilepsy.** Gillham (1986) stated that people become seizure-prone when a particular area of the brain becomes electrically unstable. It has been reported that 6 percent of the population will have a seizure. Batshaw and Perret (1986) noted that seizures beginning before age two are usually associated with developmental deficits.

Seizures may take many forms. The three most common types of seizure disorders are:

(a) **Petit mal**: seizures are characterized by brief lapses in or out of consciousness (few seconds to a few minutes). The child may stare, flutter or blink his eyes, grow pale, or drop whatever he is holding. He may be mistakenly viewed as day dreaming or not listening (Heward & Orlansky, 1988).

(b) **Grand mal:** seizures are characterized by the child becoming tense and slumping to the floor unconscious. Muscle jerking, sporadic breathing, loss of bladder control, and saliva emission proceed for several minutes until consciousness is regained.

(c) **Psychomotor** seizures are characterized by purposeless movement such as repetitive hand and arm movement, walking, confusion and often times dizziness.

More recent, Hallahan and Kauffman (1991) noted that The International League Against Epilepsy suggests two major classifications of seizures: (1) generalized seizures (those involving a large part of the brain) and (2) partial seizures (seizures in a localized area of the brain).

spina bifida (also known as neural tube defect) - a congenital midline defect resulting from failure of the bony spinal column to close completely during fetal development. A portion of the spinal

cord and nerves that control the muscles and feelings fail to develop normally. Pieper (1983) noted that if the lining of the spinal cord bulges through an opening in the infant's back at birth, the condition is properly called meningocele. If the spinal lining, spinal cord, and nerve roots all protrude, the child is said to have myelomeningocele (the most serious type). It is further noted that these children have some degree of paralysis of the lower limbs and usually lack full control of their bladder and bowel. Furthermore, children with spina bifida usually will need the use of a catheter (tube-bag) to collect their urine. According to Pieper (1983), catheterization should be taught to these children so that they can empty their bladders at convenient times which will lead them in becoming self-sufficient.

multiple sclerosis - a disease of older adolescents and adults. It is a chronic, slowly progressive disease of the central nervous system in which there is a hardening or scarring of the protective myelin sheath of certain nerves. These students usually tire quite easily and require the use of a wheelchair.

cerebral palsy - A group of conditions affecting control of the motor system due to lesions in various parts of the brain. The diagnosis of cerebral palsy implies that movement disorder is a prominent finding. Gillham (1986) noted that cerebral palsy is one of the most prevalent physical impairments found in school aged children. Batshaw and Perret (1986) reported data indicating that cerebral palsy occurs at a rate of approximately 1.5 per 1,000 live births. It is a long-term condition that involves damage to the brain or an abnormality of brain growth that causes paralysis or a motion disorder of the limbs. Many researchers have concluded that cerebral palsy is a developmental disability that is a multihandicapping condition which is far more complexed than a motor disability alone (Batshaw & Perret, 1986).

Cerebral palsy may take many forms. The three most common forms of cerebral palsy are:

(a) **Ataxia**,which is marked by slow, recurring, weaving movement of arms and legs, and by facial grimaces. These children have a poor sense of balance and body position. Gillham (1986) reported that these children seem to be constantly attempting to overcome the effect of gravity to stabilize their bodies. Their communication skills may be impaired.

(b) **Spasticity** which is marked by tense, contracted muscles. These children are known for their poor coordination, and their scissor gait walk. They may be unable to grasp objects with their fingers. In addition, their communication skills can be affected.

(c) **Athetosis** which is marked by large, irregular, twisting movements that are uncontrollable. These children may not be able to control the muscles of their lips, tongue, and throat. They may drool. There is usually extreme difficulty in expressive oral language and communication skills (Gillham, 1986).

Hallahan and Kauffman (1991) noted the classification of cerebral palsy according to the type of brain damage and consequent type of motor disability. The three classifications they noted are termed;

pyramidal (spastic): Children who have suffered damage to the motor cortex or to the pyramidal tract of the brain. The results include problemswith voluntary movements and in spasticity-stiffness or tenseness of muscles and inaccurate voluntary movement. About 50 percent of cases show spasticity.

extrapyramidal (choreoathetoid, rigid, and atonic): Children with damage outside the pyramidal tracts that results in abrupt, involuntary movements and difficulty maintaining posture (choreoathetoid), mallerable rigidity or "lead pipe stiffness" (rigid),

or floppy muscle tone (atonic). About 25 percent of cases show symptoms associated primarily with extrapyramidal damage.

mixed: Damage is to both pyramidal and extrapyramidal regions of the brain, and the student shows a mixture of effects (e.g., spasticity in the legs and rigidity in the arms), About 25 percent of cases are classified as mixed (Hallahan & Kauffman, 1991).

A high percentage of children with cerebral palsy have other conditions such as hearing impairments, visual impairments and degrees of mental retardation. Some cerebral palsy children have normal and above-average intellectual capacity (Batshaw & Perret, 1986).

Grove (1976) concluded that management and treatment for these children may require physical therapy, occupational therapy, speech therapy, nursing, medication, orthoepic aids and sometimes surgery. Dyar (1988) reported that although there is no cure for cerebral palsy, advances in medical and rehabilitation technology offer increasing hope of overcoming disabilities imposed by the neurological damage.

Another type of neurological impairment is in the area of **paralysis.** The term "plegia" is often used to identify and describe the affected body parts. There are seven general major classifications that educators should be aware of:

paraplegia the paralysis of the legs and lower part of the body;

dysgraphia the inability to produce motor movements required for handwriting;

hemiplegia the paralysis of one side of the body;

monoplegia the paralysis of one body part;

triplegia the paralysis of three of the body's limbs;

diplegia a paralysis associated more to the the legs than the arms and;

quadriplegia the paralysis of all four limbs.

It is quite evident that a student who is paraplegia will have similar but yet different needs from a child who is diplegia. However, any child who has any degree of paralysis will require special modifications and adaptive equipment to meet his/her educational needs.

Some children are physically handicapped because of defects or diseases of the muscles or bones. A few of the most common musculoskeletal conditions of school-aged children are:

muscular dystrophy (a hereditary disease) - is one of the more common impairments of the muscle. It is characterized by weakness and atrophy of the skeletal muscles with increasing disability and deformity as the disease progresses. This disease gradually weakens and wastes away the body's muscles. There are two major types:

(a) pseudohypertrophic (Duchenne or progressive)- This disease is found mostly in boys. Hallahan and Kauffman (1991) reported that pseudohypertrophic form is usually first noticed when the child is learning to walk, and it progresses throughout childhood. By early adolescence the student is often confined to a wheelchair and seldom lives beyond young adulthood.

(b) facioscapulohumeral (Landouzy-Dejerine) is found in both boys and girls. The onset of this disease is usually adolescence. The progression is slower than the Duchenne form. Some individuals become totally disabled, although

others live a normal life span and are hardly aware of the symptoms (Batshaw & Perret, 1986).

As noted, problems associated with muscular dystrophy are impairment of physical mobility and the prospect of early total disability or death. Children with muscular dystrophy are known to fall easily, walk with an unusual gait, and have difficulty getting to their feet after lying down. These children usually use braces or powered wheelchairs, depending on the degree of the impairment. Thus, the educational needs for these children will require physical and medical considerations, along with psychological resources.

scoliosis - a lateral curvature of the spine that is most commonly seen in the age group of 12-16 years; more frequent in females than males. Medical supervision is required for monitoring the progress of the scoliosis. If the curve progresses to a more severe stage, surgery is often performed. These children will require the use of a brace.

arthritis - characterized by pain in and around the joints. During severe attacks, this condition will limit the amount of fine and/or gross motor functions in the noted affected joint(s). Juvenile rheumatoid arthritis is the condition that commonly affects children. This condition is found in children from three years of age to adolescence. More girls are affected than boys. This condition may vary in severity from mild to extremely severe resulting in joint deformity. Another common form of arthritis is osteoarthritis. This is likely to occur when the child has a condition in which a joint has been dislocated. In summary, children who have these conditions will usually need physical therapy to prevent or correct the deformity. Also, medical attention is essential.

Other physical and health impairments that can adversely affect a learner's academic and social performance are:

diabetes - a hereditary metabolic disturbance wherein there is an inadequate supply of or use of insulin. This in turn affects the liver which is unable to utilize and properly store body sugar. Some students are required to take insulin throughout the day and to adhere to a specialized diet.

asthma - a disease of the bronchial tubes of the lungs marked by attacks of difficult breathing caused by allergies. Asthma attacks can occur without warning. The attacks can interfere with the child's ability to breathe.

hemophilia (also known as the bleeders disease) - a congenital hereditary defect of blood coagulation found almost entirely in males with females as carriers. The most serious consequences are usually internal, rather than external, bleeding;. Contrary to popular opinion, minor cuts and scrapes do not usually pose a serious problem (Heward & Orlansky, 1988). Internal bleeding can cause swelling, pain and permanent damage to a child's joints, tissues, and internal organs and may necessitate hospitalization for blood transfusions (Verhaaren & Connor, 1981). A child with hemophilia may need to be excused from physical activities and may use a wheelchair during periods of susceptibility.

accidents (resulting from automobiles, falls, poisoning, etc.) More children die in accidents each year than are killed by all childhood diseases combined (Hallahan & Kauffman, 1991). Accidents resulting from automobiles contribute to a large number of children with head and spinal cord injury. Sports injuries and accidents also contribute to temporary and permanent disabling conditions of children and youths (Vinger & Hoerner, 1986). According to Rosen and Gerring (1986), in the United States about 20,000 persons under the age of 21 have survived a head injury severe enough to require 3 weeks or more of hospitalization.

trauma - the result of an experience that inflicts serious damage to the body, physiologically and/or psychologically. Conditions such as

disfigurement or amputation may cause children to have both a physiological and psychological trauma. Another common trauma condition that has been well documented is that of burns.Yurt and Pruitt (1983) reported that burns are the leading cause of injury in childhood. Children with serious burns usually experience pain, scarring and limitations of motion, lengthy hospitalizations, and repeated surgery.

AIDS (Acquired Immune Deficiency Syndrome) The virus that causes the disease (HTLV-III) interferes with the body's immune system, leaving the person vulnerable to chronic and ultimately fatal infections (Allen & Stiehm, 1986). Presently there is no known cure for the disease. Church, Allen and Stiehm (1986) describe AIDS as a "devastating epidemic disorder of extraordinary morbidity and mortality." Crocker (1989) stated that as children born with AIDS fight for life, there will be an increase in the number of these children needing special medical and educational services. "These services will be required not only because of the children's fragile and declining physical health but also because of other effects the disease may produce, including psychotic behavior, mental retardation, seizures, and neurological impairments similar to cerebral palsy."

Children born to substance-abusing mothers The effects of alcohol and drug addiction during pregnancy result in babies being born with multiple physiological, emotional and cognitive problems. In addition, after they are born these babies are at-risk of neglect and abuse due to their mother's addiction. Hallahan and Kauffman (1991) stated that many women who are intravenous drug users not only risk chemical damage to their babies but also give them venereal diseases such as syphilis, which can result in disabilities.

It is quite evident from the summary of physical and health impairments, that abnormal or pathological reflexes and reactions, abnormal tone, incoordination, weakness and paralysis, absence of body parts, and limited range of motion, interfere with motor function and

frequently alter the sequence, rate, and quality of motor development. This in turn, negatively affects function, which more than likely has an adverse effect on a child's educational functioning (Kirk, 1977).

The next section, "Educational Needs of Learners with Physical and Health Impairments" will outline the unique educational needs that are characteristic of this population. The recognition of these needs will assist the school personnel and parents with developing appropriate goals and instructional objectives for the students.

Educational Needs of Learners with Physical and Other Health Impairments

Like other handicapping conditions, i.e., mental retardation, visually impaired, hearing impaired and the learning disabled, the physical and health impaired learner requires the development of an individualized educational program to meet his/her unique educational needs. The educational problems are as multifaceted as their disabilities. However, there are those unique educational needs that can be characterized by the physical and health impaired as a population. This is not to proclaim that other children with handicaps do not have some of these same needs or that all physical and health impaired children have these same needs.

Since the primary distinguishing characteristics of physical and health handicapped children are of medical conditions, health problems, or physical disabilities, a certain set of educational needs can be generalized for this group of children.

Twenty (20) specialized needs have been formulated to address the educational needs of physical and health impaired learners. The needs will be categorized into two groups:

- the unique needs of the student (**student need**) with physical and/or health impairments and

- the needs of the school system **(system need)** to develop programs, employ personnel, provide services and resources and implement procedures and polices to educate learners with physical and other health impairments and provide a free and appropriate education.

Unique Educational Needs and Learning Characteristics of Learners with Physical and other Health Impairments (Student Needs)

A. Academic Needs

Heward and Orlansky (1988) found that many children with physical and health impairments are extremely restricted in their activities and intellectual functioning, whereas others have no major limitations on what they can do and learn. They further noted that (1) some are entirely normal in appearance, others have disabilities that are immediately apparent, (2) some children must use special devices or equipment that call attention to their disabilities, others display behaviors that are not under voluntary control, and (3) some disabilities are always present, whereas others occur only from time to time.

As noted, not all physical and health impaired students experience learning problems. Those students with impairments not related to neurological functioning, such as those with amputations and other limb deformities, may learn normally with usual classroom instructional techniques. Compton and Bigge (1977) found that the percentage of learning problems in physical and health impaired students may be no higher than that found in the normal population.

For those physical and health disabled students who do have some learning problems, educators must first become familiar with

the ways in which the impairment affects the acquisition of academic skills.

Researchers have noted that children with neurological and motor disabilities face a number of formidable difficulties over a whole range of learning tasks (Haskell, Barrett & Taylor, 1977). Another body of research conducted by Bigge and O'Donnell (1977), Connor (1975), and Connor, Rusalem, and Cruickshank (1971), concluded that children who are neurologically impaired are, as a group, more likely to have intellectual and perceptual deficits and, therefore, to be behind their age-mates in academic achievement. Haskell, Barrett and Taylor (1977) further supported the view that neurologically impaired children are slower because they do not imply an appropriate strategy when obliged to extract meaning from the ceaseless input of information from the environment.

The researchers also found that handicapped children with motor disorders arising out of central nervous system dysfunctioning, require greater opportunities for physical experimentation in order to learn how to solve simple problems.

Hanson and Harris (1986) reported that some of the most effective teaching techniques that can be used with children with disabilities are derived from the principles of **behavior modification**. "A sequence of steps is determined--beginning with what the child can already do and leading to an ultimate goal--and the child's performance of each successive step is rewarded." He further noted that such techniques are especially effective because they focus on specific behavioral responses and on maximizing motivation to perform.

B. **The need for a specialized curriculum.**

Kendall (1985) outlined the curriculum needs for physical and health impaired students. She emphasized that an individualized

special education curriculum for students with physical and health disabilities should be designed to:

(1) improve mobility skills,

(2) enhance self-concept in the areas of self-worth, self-esteem and self image,

(3) improve any academic deficiencies,

(4) improve socialization skills so that the student may be integrated, to the greatest possible extent, with nonhandicapped children,

(5) improve adaptive behavior,

(6) promote safety and emergency skills

(7) improve self-care skills in order to develop independent living skills,

(8) improve health maintenance skills

(9) develop prevocational and vocational skills to prepare for career opportunities and the world of work and,

(10) provide opportunities for successful goal completion.

Kirk and Gallagher (1989) identified what they considered unique curriculum needs for physical and health impaired children. They classified these needs in three areas: motor skills and mobility, self-care skills, and social and emotional adjustments. They further concluded that the physical and health impaired child must receive information and training in those areas in order to enhance academic achievement.

C. Physical Needs of the Physical and Health Impaired

Physical and health impaired children have basic physical needs that must be addressed. As noted by Gearheart and Weishahn (1980) the primary needs are:

- Proper exercise Exercise is extremely vital, particularly for those students with amputated limbs. Physical education activities and games must be adapted or individualized to ensure maximum fitness and exercise,
- Proper hygiene
- Proper rest and relaxation
- Adherence to medical instructions (such as to the time to take medicine) and
- Proper maintenance of adaptive devices and amputations

They also indicated that the school personnel need to be aware of the physical stamina imposed by some physical and health impaired conditions. Some students may require several rest periods, a shortened school day or limits regarding the type and degree of physical activities.

D. The need for self-help skills

Bigge and O'Donnell (1977) stressed that by teaching self-help skillschildren to with disabilities, we are providing them an opportunity not only to survive in society but also to contribute to it. Increased independence in self-care is a goal for every person with a physical or health disability. In terms of psychology, the more a person is able to do for himself , the more his self-esteem is heighten.

E. The need for appropriate adaptive devices

It must be remembered that not all physical and health impaired children need any type of adaptations. The adaptation depends on the child's physical capabilities and individual needs. The following three devices are generally used to assist a physically handicapped child:

prosthesis	an artificial replacement for a missing body part (such as an artificial leg)
orthosis	a device that replaces a function no longer present in a part of a person's body (such as a brace)
	Note: a prosthesis or orthosis allows the learner to use some residual function of his remaining body parts. . . The apparatus help the person to make use of whatever residual function he has in the most efficient way possible. However, it is often more efficient for a person to learn not to rely completely on a prosthesis or orthosis as long as he can accomplish a task without it (Hallahan & Kauffman, 1978).
adaptive devices	adaptations of ordinary items from the school and home that makes it easier to perform a task.
	Note: for those physical and health impaired students with accompanying communication problems, an alternative communication system must be employed.

Such systems include speech boards, computers and electronic synthesized speech output devices.

Teachers who have had no previous contact with physical impaired children need to learn how to use and maintain these adaptive devices and equipment. (Note: this knowledge can be obtained by discussions with the medical staff, parents and therapists.) It is a good practice for teachers who will likely assume the responsibility for assisting students in maneuvering a wheelchair or other devices to request demonstrations regarding the care and maintenance of the equipment.

F. The need for psychological support

Research does not support the notion that there is a personality type associated with any physical handicap (Bartel & Guskin, 1971; Connor et al., 1971). However, there are some psychological issues that are common among physical and health impaired students.

To meet the students' educational needs, teachers must become aware and address the psychological needs of physical and health impaired learners. Many students may appear angry, depressed, withdrawn, frustrated, or overly sensitive if the impaired is of a recent traumatic incident. Hanna and Graff (1977) stated that students with developmental disabilities--that is, disabilities that have been present since birth--ordinarily have had sufficient time to adjust emotionally to their problems and the limitations they impose. When students come to accept themselves and their disabilities, chances are great that they will be much more amenable to the educational goals and activities.

Hanna and Graff (1977) outlined five distinct stages that people experience after suffering some kind of loss of functional ability. The stages are:

1. Denial
2. Anger or Rage
3. Bargaining
4. Depression
5. Acceptance

They pointed out that individuals may progress through these stages in any order, bounce back and forth between, or become stuck in one for an extended period. They cannot be forced from one to another, but should be allowed to progress at their own rate with help and understanding of what they are experiencing.

In a more recent study, Livneh and Evans (1984) identified some additional stages in adjusting to a physical disability:

1. shock
2. anxiety
3. bargaining
4. denial
5. mourning
6. depression
7. withdrawal
8. internalized anger
9. externalized aggression
10. acknowledgment
11. acceptance
12. adjustment

Heward and Orlansky (1988) found that children who have a highly visible and conspicuous impairment are more prone to exhibit psychological problems. The way in which children think about themselves and the degree to which they are accepted by others often are affected by the visibility of a condition. These children's visible impairment often prompt a great deal of curiosity and leads to frequent and repetitive questions from others.

Another major set of psychological problems encountered by the physically disabled person are unresolved feelings of dependency and inadequate ways of dealing with necessary physical dependence. Development of an excessive psychological dependence may interfere with the process of developing independence and a sense of self-

sufficiency (Sirvis & Carpignano, 1977).

Freeman (1970) outlined some special needs of the physical and health disabled adolescent which include:

1. The need for privacy

2. The need for participation
(Including the adolescent in making decisions about himself.)

3. The need for confidence
(Helping the adolescent set realistic goals and understanding his assets.)

4. The need for knowledge
(Providing the adolescent with an understanding of the disability and the personal, social and vocational implications of the disability.)

5. The need for support
(Providing support and encouragement to the adolescent from adults. This will help facilitate risk-taking behavior and the assumption of greater responsibility.)

G. The need for mobility

Learners with physical and health disabilities are sometimes deficient in social interactions with nonhandicapped students due often to their lack of mobility and coordination. The teacher should be aware of the impact that the lack of mobility and movement have on the student and his interaction with peers. Movement is essential not only for the obvious reasons of maintaining and improving motor function, but also for facilitation

of important psychosocial interactions. Independent ambulation is an important factor in a student's total development, possibly more important to the student than many of the academic challenges presented in the classroom (Gearheart & Weishahn, 1980).

H. The need for transportation

Physical and health impaired learners may require specialized transportation in order to attend school. Transportation, depending on the disability, may consist of regular school buses, specialized lift-buses, taxicabs, and in extreme cases an ambulance. As specified by P. L. 94-142, under related services, transportation is considered a related service and must be provided at no cost to the parents, provided that it is determined to be part of the student's IEP.

I. The need for physical education and recreation

As with nonhandicapped children, physical and health impaired students need to participate in physical activities. Of courses, information related to a child's physical limitations, precautions and restrictions must be considered before planning a program.

Adaptive physical education and special equipment are available to help many physically handicapped students. Kirk and Gallagher (1989) noted that in many cases, all that is needed to include a physically impaired student in a physical education program is an adjustment in the rules, procedures or modification of the equipment.

J. The need for prevocational and vocational preparation

In order to prepare for the world of work, physical and health impaired students must obtain the necessary prevocational and vocational skills that are required for their appropriate career

choices. The attainment of these skills will help the students prepare for present and future life activities. Bigge and O'Donnell (1976) stated that appropriate preparation for vocational education should be initiated early in a child's life and should not be left to some future date. Inadvertent neglect of this preparation encourages dependent behavior which is incompatible with the self-reliance and determination needed to develop work readiness and work skills.

K. The needs for transitional skills from school to the community

Achieving a meaningful place in society is clearly related to the degree to which one can earn a living, which is related of course, to how independent one is, or can become (Gardner & Warren, 1978). Physical and health impaired students need the support of a transitional program to help them adjust to the many psychological, social and architectural barriers in society. Kirk and Gallagher (1989) found that as they grow older, children with physical handicaps may face restricted activities, limited educational and vocational choices, and intentional or unintentional discrimination. He concluded that these problems create special difficulties in terms of self-concept and adjustment to the handicapping condition and may require a variety of rehabilitation services.

The Needs of the School System in Educating Learners with Physical and other Health Impairments (System Needs)

A. The need for trained educational personnel.

In order to make certain that physical and other health impaired students are provided an educational program to meet their specific needs, the Michigan State Board of Education in 1987 outlined specific requirements for teacher certification:

The teacher education program for teachers of the physically and other health impaired shall include a minimum of 30 semester hours. In addition to the requirements of R340.1781, the teacher education program for teachers of students with physically and other health impairments shall include all of the following:

(a) A minimum of 12 semester hours of special skills and techniques for working with physically and other health impaired students, including all of the following:

(i) Medical aspects of temporary and permanent physical disabilities of a wide variety.

(ii) Impact of neurological impairments and mental retardation on learning.

(iii) Equipment and techniques of physical management of physically and other health impaired students.

(iv) Methods and materials for training, observation, and assessment of physically and other health impaired students, including techniques for nonvocal communication.

(b) A minimum of 10 semester hours in the development of competence in the following areas:

(i) Ability to work as a member of a multidisciplinary team which includes medical and paramedical personnel and to supervise paraprofessional personnel.

(ii) Ability to develop and implement an instructional plan for students, including those confined to home or a hospital.

(iii) Ability to explain the condition of the students and the condition's impact on learning and to serve as a resource person for physically and other health impaired students within regular and special education classes.

(iv) Ability to counsel students regarding all of the following:

(A) Human sexuality
(B) Home, family, and community living
(C) Career selection
(D) The use of local, state, and national resources

(v) Ability to develop, implement, and reinforce special instruction in all of the following life skill areas:

(A) Self-help skills
(B) Recreation and leisure time activities
(C) Community transportation and mobility
(D) Recruitment
(E) Use of personal aids

(vi) Ability to understand the role and function of related service personnel and to work in conjunction with them in the development and implementation of special instructional programs or techniques necessary to a physically and other health impaired individual.

(vii) Ability to observe and assess students with physical and other health impairments through the use of formal and informal tools and techniques.

(viii) Ability to work intensively and extensively with parents of students, both as a home instructor for infants and their parents and as a liaison between the educational agencies and the home.

(c) Directed student teaching with physically and other health impaired students pursuant to R 340.1782(c). (R340.1799a Rule 99a.)

Furthermore, the teacher of the physical and health impaired must be trained to develop individualized educational programs for the children, supervise and monitor the students' health condition, adapt the curriculum to meet the students' needs, and modify the environment.

In addition, the teacher should be prepared for working with those children with fatal diseases such as muscular dystrophy. Physical and health impaired children encounter death more frequently than their nondisabled peers. Unfortunately, they have little or no preparation for, or understanding of, death (Sirvis & Carpignano, 1977). The teacher may need to help the child, other students, and school personnel deal with the gradual loss of the child's physical abilities and the possibility of death (Heward & Orlansky, 1988). The teachers has a responsibility to the physical and health disabled child, especially those with terminal illness, to help him/her develop an understanding of death as part of the natural cycle of life (Carr, 1973).

In regards to health observations and medical supervision, the teacher must be made aware of the medical considerations in

working with students who require medication throughout the school day. For example: Some health impaired students require insulin injections which may need to be administered during the school day. Furthermore, the teacher needs to be aware of the medication prescribed and possible side effects that might interfere with the student's classroom performance. Certain medications may cause tiredness, frequent toileting, or hyperactivity (Hanna & Graff, 1977). In the case of diabetic children, the teacher may be responsible for the supervision of diet, toileting needs and the amount of active participation.

B. The need for early identification and early intervention

Kirk and Gallagher (1989) reported that in some cases, physical disabilities can be corrected with early medical treatment. Whereas, in other cases, early intervention can minimize the severity of certain physical disabilities and health conditions or prevent the development of additional disabling or medical conditions. Grove (1976) stated that approximately 250,000 children born each year with significant birth defects are not considered disabled or handicapped by the time they reach school age, thanks to improved medical and surgical treatment or to the results of successful early intervention programs.

The early development of adequate skills also gives children a foundation for (1) increasing interactions in their environments, which in turn help them acquire the cognitive, language, and social skills that are necessary for success in school (Kirk & Gallagher, 1989) and, (2) in developing coping and adaptive skills. Note: the Michigan Revised Special Education Rules (1988) mandates special education services for handicapped children <u>birth</u> to age twenty five.

C. The need for related services

A high percentage of physical and health impaired children require related services such as occupational, physical and speech therapists and school nurses. Kirk and Gallagher (1989) reported that these professionals support the efforts of the school in three primary ways:

(1) Providing direct services to students,

(2) Developing individualized education programs (IEPs) and specific programs in cooperation with the classroom teacher, and

(3) Training the classroom teacher to carry out or follow through on specific interventions.

In order to effectively plan an individualized educational program for a student, there must be cooperation between the medical, health and school professionals and the parents. Each of these components, medical and educational, are dependent upon the other. Both disciplines must work together if the child is to function and achieve at his/her maximum potential.

D. The need for flexible scheduling

It is generally recognized that poor school attendance is a major characteristic among students who are physical and health impaired. This is primarily due to the necessary appointments for medical follow-up, therapy sessions and required rest periods. Poor attendance by these students usually results in missed school assignments, thus, resulting in poor academic performance.

Teachers must be amenable to change in planning an educational program for the physically impaired student. The staff must be flexible in order to accommodate the necessary related

services, support personnel, and medical treatment procedures. Interruptions in the daily programs by such services as physical therapy, occupational therapy, and speech and language therapy will occur. However, support sessions should be scheduled so to minimize classroom disruptions.

E. The need for program standards and modifications

The Michigan State Board of Education Revised Rules (1988) established a list of conditions for providing educational programs for the physical and other health impaired students. It stipulates that:

> (1) Programs for the physically and other health impaired shall have not more than 10 students in the classroom at any one time, and the teacher shall be responsible for the educational programming for not more than 15 different students.
>
> (2) Adaptive devices deemed necessary for instruction by the individualized educational planning committee shall be provided.
>
> (3) Special classroom units serving physically and other health impaired shall provide not less than 60 square feet of floor space per person.
>
> (4) Health care aides may be employed to serve in a supportive capacity to the nurse, physical therapist, or occupational therapist.
>
> (5) Paraprofessionals may be employed to serve the program and may be assigned by the teacher to assist any of the following persons in a supportive capacity:
>
> (a) a nurse
> (b) an occupational therapist

(c) a physical therapist
(d) a speech and language teacher

Healy, McAreavey, Hippel and Jones (1983) developed a chart to assist teachers in considering how much program modification may be needed for a learner with physical and other health impairments. (Refer to Chart A)

Chart A

Severity of Impairment, the Learner and the Program

	Level One Mild	Level Two Mild-Moderate	Level Three Moderate	Level Four Severe
Is the child handicapped?	No	Possibly	Yes	Yes
How Does it Affect the Child's Functioning?	Health impairment does not interfere with day-to-day functioning and learning.	Health impairment does not interfere with learning, but there is a possibility of unusual episodes or crises.	Health impairment either presents frequent crises, or else so limits the child's opportunity to partcipate in activities that it interferes with learning.	Health impairment is so severe that special medical attention is regularly needed. The child's opportunity for activity is so limited that he or she may not be able to participate in a regular classroom.
Must the Program Be Modified?	No	No change in program planning is necessary. Be aware of the potential for unusual occurences. Report them to the parents or doctor. Know any first-aid procedures that might be required.	Activities will have to be modified to allow a health impaired child to participate. Staff must know proper first-aid procedures and be prepared to deal with children's questions about crises.	Extensive staff and program alterations are necessary to accept child into program. Home- or hospital-based programs may be more appropriate. Classroom support from medical services will be necessary, if child is in classroom.

F. The need for a continuum of special education services and settings in the least restrictive environment

Due to the diversity of physical and health impairments, a complete continuum of educational services must be offered, ranging from full-time hospitalization to full-time regular education placement.

The Cascade Model designed by Reynolds (1962) of integrating handicapped children into the least restrictive educational program, proposes a range of educational placement options for handicapped students.

Cascade Model
Continuum of Educational Services

(starting from the most restrictive placement)
Hospital and Treatment Centers
Hospital School
Residential School
Special Day School
Full-time Special Education Class
Part-time Special Education Class
Special Education Resource Class
Regular Classroom with Related Services
Regular Classroom with Consultation
Regular Classroom
(to the least restrictive placement)

It must be reemphasized that students with physical disabilities who have no other learning impairments can achieve their greatest potential in the regular classroom. If children with physical disabilities are going to learn to live in integrated environments as adults, they must attend regular schools and classes to the greatest extent possible (Kirk & Gallagher, 1989). This current trend to educate students with physical and health impairments in regular school settings makes it important for teachers to have an understanding of how a particular condition may affect a child's

learning, development, and social behavior (Heward & Orlansky, 1988).

In regards to the settings for the delivery of services, (unlike other handicapped students) physical and health impaired children usually receive their instructions either at home, school or in the hospital depending on the medical status of the child. A summary of the common three settings are:

- **home** The student is unable to attend school due to medical or health problems. The student receives his program in his home with the assistance of a homebound teacher.

- **school** The student receives his program at the school site with the assistance (if warranted) of a special education teacher and/or receives related services.

- **hospital** The student's physical or health condition is affected to the degree that hospitalization required. The child's educational program is provided at the hospital with the assistance of a homebound teacher, special education teacher, or a hospital staff teacher.

If a student requires bed rest, hospitalization or tutorial assistance, a homebound teacher is usually the person assigned to provide the instructions. The classroom teacher will be asked to assist the homebound teacher in preparing work for the student. This coordination between the two teachers will help the student keep up with his class work.

G. The need for facility modifications

Physically impaired students are much more able to be integrated into regular education programs than in the past because of the reductions of architectural barriers. Section 504 of the Rehabilitation Act of 1973 and the Architectural Barrier Act of 1968, P.L. 90-480 require that architectural barriers for the handicapped be eliminated. Schools are to meet the minimum design and construction guidelines set forth by the American National Standards Institute. In addition, institutions built by or receiving federal funds must make all reasonable efforts to eliminate architectural barriers and promote unrestricted accessibility (Hanna & Graff, 1977).

Some of the most common architectural barriers confronted by physically handicapped students with mobility related problems are:

•curbs:	No curb cuts make it difficult for many physically handicapped students to gain access to school sidewalks.
•entry stairs:	Entry stairs present a barrier for students who require a ramp or elevator.
•entry doors:	Doors that are difficult to open present a problems because they are usually too heavy, have excessive tension or the handles are too high or difficult to grasp.
•passage widths:	Door openings that are too narrow present a barrier for those who must use a wheelchair.

•restroom facilities:	Inappropriate placement of stools, sinks, mirrors, and towels make them inaccessible for physically handicapped students to use.
•halls:	Halls with no handrails present a barrier for students needing ambulation assistance.
•worktables or desks:	Many worktables and desks are too low for wheelchairs or are uncomfortable for students with leg braces.
•aisles:	Aisles that are too narrow to accommodate crutches, canes, and wheelchairs limit a student's mobility.
•Other architectural:	Other barriers include such items as telephones and water fountains that are usually placed out of the reach for handicapped students. (Hanna & Graff, 1977)

As noted previously, many physical and health impaired students are able to function in a regular education program, providing that the setting is barrier-free.

H. **The need for medical supervision by the school personnel**

The school personnel needs to know how to care for a child in case of an emergency. The physical and health impaired population experiences more emergencies than other handicapped children. The staff should have emergency numbers and procedures posted in central location throughout the building (i.e., office, lunchroom,

gym, the classrooms of the physical or health impaired student). Most important, the staff should be trained in CPR and in first aid. The staff should know how to assist and monitor students with physical and health impairments.

Another important requirement is that the school personnel should know how to assist students with epilepsy. Many students with epilepsy are placed in regular education. Unfortunately, people are still misinformed regarding the treatment, care, and assistance for these students. A high percentage of seizures can be controlled with appropriate medication. Due to the many misconceptions and myths regarding epilepsy, the following suggestions for aiding students are recommended by the Epilepsy Foundation of America (1974).

1. Keep the child calm.

2. Ease the child to the floor and loosen his/her collar. (Note: the seizure cannot be stopped. Let it run its course.)

3. Remove sharp or hot objects which may injure the child but do not interfere with the movements.

4. Do not force the mouth open or place anything between the teeth.

5. Turn the child's head to one side for release of saliva.

6. Place a soft object under the head.

7. Allow the child to rest upon regaining consciousness if he/she wishes.

8. Do not remove the child from class unless medically advised.

9. If the seizure persists beyond a few minutes, call the school nurse or doctor for instructions and notify the parents.

Note: it is the responsibility of the teacher to discuss epilepsy with the other students.

I. The need for parent support and training

To enhance the educational performance of physical and health impaired students, parents must be an integral part of the process. Parents must receive training and support in learning how to care for their handicapped child, provide educational stimulation and reinforcement, adhere to medical directions and follow-up appointments and assist the child in becoming a responsible and meaningful member of the family.

The family must be informed and trained to monitor the child's condition and to react appropriately in cases of emergencies. The parents must establish a support network that will assist them with rearing their child, financial support for the medical expenses, and emotional support and guidance. It is not uncommon for parents to experience emotional problems in caring for their physical or health impaired child.

The presentation of the twenty educational needs that are quite common and unique for physical and health impaired students will hopefully assist educators in planning an individualized educational program that will meet their needs, help them reach their maximum educational potential and help them become productive members of society.

J. The need for information, equipment and trained personnel in technological advances

A number of technological advances have made it easier for learners with physical and other health impairments to function in school, in the home and in the community. Personal computers (PCs) have greatly changed the ways learners with physical and other health impairments interact with the world. Such advances as computer-assisted touch boards (interacting with the computer through body movements, breathing, eye movements, light and sound.) have greatly enabled students to increase their academic skills, cognitive development and even their social-personal skills. Technology allows children with disabilities to take part in activities that previously were inaccessible to them. Technology serves in many instances as a means for achieving normalization (Brody, 1989).

Summary of the Educational and Social Needs of Learners with Physical and other Health Impairments

It has been presented that (1) early intervention can assist physical and health impaired children in developing adaptive skills, developing a positive self-concept, reducing developmental delays, and in assisting parents with acquiring skills that are vital in supporting and caring for the child, (2) physical and health impaired learners may require curriculum modifications, adaptive equipments, specialized programs, and modification in the physical environment, (3) independent ambulation must be given priority if the students are to be allowed an equal opportunity to grow socially, educationally, and emotionally, (4) as the physical conditions of a student changes, so must the school program, schedules, materials and requirements, (5) teachers of students with physical and health disabilities are expected, as the need arises, to make modifications to meet the needs of the students and, (6) Communication is vital between physicians and the school so that both the child's physical status and learning are optimized.

Addressing the twenty specialized needs for physical and health impaired students will (1) assist educators, parents and the medical personnel in developing an individualized educational program for these students, (2) assist the students in developing functional and independent living skills, (3) help the students and parents accept and make appropriate adaptations for the handicapped, and (4) assist the students in becoming productive members of society.

In conclusion, recognition of the unique needs of physical and health impaired students, along with the continued advances and the shared responsibility in the fields of medicine and education, will undoubtedly reduce the psychological, social, academic, and physical barriers for physical and other health impaired students.

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